INTERPACE
INDUSTRIES, INC.

736 HARRISVILLE ROAD, OGDEN, UTAH 84404 801-782-7933

M/43/014

July 1, 2002

D. Wayne Hedberg
Permit Supervisor
State of Utah Division of Oil, Gas, and Mining
1594 W North Temple, Suite 1210
Box 145801
Salt Lake City, UT 84114-5801

Dear Mr. Hedberg,

Please find enclosed the two outstanding items from our Notice to Commence Large Mining Operations (Henefer Red Clay, M/043/014). The two outstanding items are the Vegetation Survey, which was performed by Dr. Alan Stevens, and the Soil Analysis on the material to be used as a proto-soil.

If there are any questions or follow-ups needed to complete the permitting process please call me at any time.

Sincerely,

Aaron H. Hancock
Director of Mining and Transportation

106.5 – Existing soil types, location of plant growth material

The soil in the area of the mine is composed of degraded Paleocene, iron-rich clay. The soil depth is variable from about six inches on the hilltops and hillsides to as much as two feet in the bottoms of the drainages. Since it derives from the Echo Formation it is almost completely clay with a small amount of clay loam and a small amount of sand derived from the silicious cobbles and pebbles of the formation. The 'A' horizon in this area is red to red-brown with a sparse to moderate organic component. The 'B' horizon is weathered clay and rock much the same as the formation itself. The surface to be mined supports only a sparse growth of native grasses with no brush at all on the hilltops and sides. The lack of calcium carbonate ($CaCO_3$) in the sediments, and consequently the soil, discourages the growth of sage and rabbit brushes normally seen in similar areas of the western hills.

a. Depth of soil material: along the ridge on which the mine is situated the soil depth is only 6" to 8".
   a 1. The volume available for stockpiling is about 500 yd3.
   a 2. The texture of the soil is clayey, dry, and crumbly to hard with little sand.
   a 3. The pH is generally 6.7 to 7.1.

b. The problem of the soils in this area is that they include a large amount of rock in the form of cobbles and pebbles. In the erosional processes that convert the base unit from rock to soil, the fine grained clays are preferentially eroded away on the hilltops and hillsides leaving a preponderance of the coarser-grained formation material. Consequently, the soils, or at least the surface materials, acquire a strong bias toward the cobbles and pebbles found in the formation. The soils are sometimes almost non-existent within those areas that are determined as the mining areas. For the most part, a better soil is created in the screening process than is available naturally. A soil analysis has been done on the material which will be used as a proto-soil. The results from the analysis are found in Appendix II (page 22)

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23 MAY 2002

VINCENT P KELLER
AMERICAN ENVIRONMENTAL CONSULTANTS LABORATORY
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SALT LAKE CITY UT 84119-4191

SOIL SAMPLE RECEIVED: 05/13/02

USU #	IDENT	Saturated Paste pH	Saturated Paste EC dS/m	SAR	Olsen P mg/kg	Olsen K mg/kg	NO3-N mg/kg	TKN ---%---	Walkley-Black OM ---%---
2806		8.2	0.5	2.6	3.4	39	4.4	0.02	0.7

USU #	IDENT	CEC meq/100g	Hydrometer Sand ---%---	Hydrometer Silt ---%---	Hydrometer Clay ---%---	Texture
2806		2.6	61	22	17	Sandy Loam

Form MR-LMO

APPENDIX II

Soil Analysis on material to be used as a proto-soil.

106.7 – Vegetation Survey

On June 14, 2002 Dr Alan Stevens from Willow Creek Seed Co. performed a vegetation survey of the mining area The results of this survey are found in Appendix III (page 23) A map showing the locations from which the samples were taken is found on map 6 7(a)

Henefer Mine Vegetative Analysis

June 14, 2002

At the Henefer Mine site there are three distinct vegetation types. Apparently last summer there was a fire that burned next to the mine site. This fire dramatically changed the vegetation type where areas were burned. The three different vegetative types identified were; 1) the area that was burned, 2) the area that was not burned, and 3) the transition between the burned and unburned area. The areas sampled are shown on the map of the mine area. The blue x's show the 9 areas sampled in the burned area. The pink x's show the 9 areas sampled in the non-burned area. The green X's show the 4 areas sampled in the transition area between the burned and non-burned area. All transects were 100' line transects using the line intercept method on June 4, 2002. The number of transects taken in each community was determined by the total area of the community. Each individual plant species was identified. Live cover and frequency for each species was determined and reported below.

Burned Area

Common Name	Scientific Name	% Live Cover	Frequency
American Vetch	*Vicia americana*	0.03	0.007/ft
Bluebunch Wheatgrass	*Agropyron spicatum*	2	0.06/ft
Cheatgrass	*Bromus tectorum*	21	3.7/ft
Common Dandelion	*Taraxacum officinale*	0.2	0.02/ft
Common Sunflower	*helianthus annuus*	2	0.1/ft
Gray Thistle	*Cirsium undulatum*	0.4	0.007/ft
Louisiana Wormwood	*Artemisia ludoviciana*	3	0.17/ft
Milfoil Yarrow	*Achillea millefolium*	0.1	0.003/ft
Muttongrass	*Poa fendleriana*	2	0.06/ft
Pepperplant	*Lepidium spp*	8	0.5/ft
Sego Lily	*Calochortus nuttallii*	0.01	0.001/ft
Storksbill	*Erodium cicutarium*	9	2/ft
White Mustard	*Brassica hirta*	0.1	0.01/ft
Woolly Locoweed	*Astragalus mollissimus*	0.06	0.003/ft
Totals		*47.9*	*6.64/ft*

Non-Burned Area

Common Name	Scientific Name	% Live Cover	Frequency
Arrowleaf Balsamroot	*Balsamorhiza sagittata*	0.7	0.003/ft
American Vetch	*Vicia americana*	4	0.26/ft
Bluebunch Wheatgrass	*Agropyron spicatum*	4	0.13/ft
Cheatgrass	*Bromus tecotrum*	2	0.38/ft
Common Dandelion	*Taraxacum officinale*	0.2	0.01/ft
Goatsbeard	*Tragopogon dubius*	0.2	0.01/ft
Intermediate Wheatgrass	*Agrpyron intermedium*	1	0.02/ft
Louisiana Wormwood	*Artemisia ludoviciana*	0.1	0.006/ft
Milfoil Yarrow	*Achillea millefolium*	1	0.04/ft
Muttongrass	*Poa fendleriana*	4	0.18/ft
Narrowleaf Paintbrush	*Castilleja angustifolia*	0.5	0.02/ft
Parry's Rabbitbrush	*Chrysothamnus parryi*	4	0.04/ft
Pepperplant	*Lepidium spp.*	0.3	0.04/ft
Sego Lily	*Calochortus nuttallii*	0.05	0.003/ft
Silvery Lupine	*Lupinus argenteus*	0.08	0.003/ft
Wyoming Sagebrush	*Artemisia tridentata wyomingensis*	28	0.19/ft
Totals		*50.13*	*1.34/ft*

Transition Between Burned and Non-Burned Area

Common Name	Scientific Name	% Live Cover	Frequency
Americn Vetch	*Vicia americana*	0.04	0.005/ft
Bluebunch Wheatgrass	*Agropyron spicatum*	6	0.17/ft
Cheatgrass	*Bromus tectorum*	37.5	5.39/ft
Common Globemallow	*Sphaeralcea coccinea*	0.4	0.02/ft
Goatsbeard	*Tragopogon dubius*	0.5	0.02/ft
Louisiana Wormwood	*Artemisia ludoviciana*	5	0.37/ft
Muttongrass	*Poa fendleriana*	0.5	0.03/ft
Rubber Rabbitbrush	*Chrysothamnus nauseosus*	0.3	0.005/ft
Storksbill	*Erodium cicutarium*	7	0.74/ft
Woolly Locoweed	*Astragalus mollissimus*	0.2	0.01/ft
Wyoming Sagebrush	*Artemisia tridentata wyomingensis*	6	0.05/ft
Totals		*63.4*	*6.81/ft*

If you have any further questions please feel free to write or call me.

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